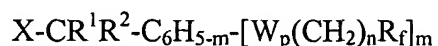


What is claimed is:

1. A method for increasing the fluorous nature of an organic compound, comprising:

reacting the organic compound with at least one second compound having the formula:



to create a first fluorous tagged organic compound, wherein R_f is a fluorous group, X is selected from the group consisting of a leaving group, a nucleophilic group and an electrophilic group, R^1 and R^2 are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, phenyl, $C_6H_{5-q}(W')_q$, $C_6H_{5-m'}[W_{p'}(CH_2)_nR_f]_{m'}$ and $C_6H_{5-m''}[W_{p''}(CH_2)_nR_f]_{m''}$, m , m' and m'' are each integers from 1 to 5, n , n' and n'' are each integers from 0 to 5, p , p' and p'' each have a value of 0 or 1, q is an integer from 0 to 5, W is a grouping of atoms selected from the group consisting of O, S, NR^3 , CR^4R^5 , and SiR^6R^7 , wherein when W is SiR^6R^7 and R^1 and R^2 are each hydrogen, X is not one of Br, N-imidazolyl and $-OH$, and W' is a grouping of atoms selected from the group consisting of OR^8 , SR^9 , $NR^{10}R^{11}$, $CR^{12}R^{13}R^{14}$, and $SiR^{15}R^{16}R^{17}$, wherein R^3 , R^4 , R^5 , R^8 , R^9 , R^{10} , R^{11} , R^{12} , R^{13} , and R^{14} are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_{n'''}R_f$ and R^6 , R^7 , R^{15} , R^{16} , and R^{17} are independently, the same or different, one of linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_{n'''}R_f$, wherein n''' is an integer from 0 to 5,

the organic compound having at least one functional group reactive with group X on the second compound forming at least one chemical bond between the organic compound and the second compound resulting in the first fluorous tagged organic compound wherein the fluorous nature of the first fluorous tagged organic compound is increased relative to the organic compound to enable separation of the first fluorous tagged organic compound from at least one other compound by using a fluorous separation technique.

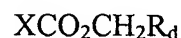
2. The method of claim 1, further comprising reducing the fluorine content of a second fluorous tagged organic compound, wherein the second fluorous tagged organic compound is

produced from subsequent chemical transformations on the first fluorous tagged organic compound.

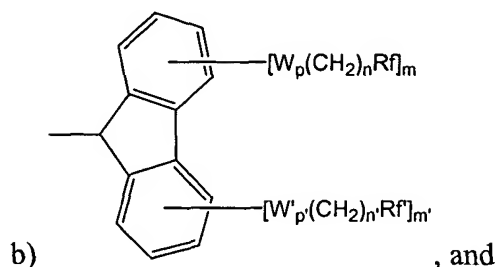
3. The method of claim 2, wherein the fluorine content of the second fluorous tagged organic compound is reduced by removing at least one grouping of atoms having a structure selected from the group consisting of: $-\text{CR}^1\text{R}^2-\text{C}_6\text{H}_{5-m}-[\text{W}_p(\text{CH}_2)_n\text{R}_f]_m$, $-\text{C}_6\text{H}_{5-m}-[\text{W}_p(\text{CH}_2)_n\text{R}_f]_m$, $-\text{W}_p(\text{CH}_2)_n\text{R}_f$, $(\text{CH}_2)_n\text{R}_f$, and R_f from the second fluorous tagged organic compound.
4. The method of claim 1 wherein X is a leaving group selected from the group consisting of a halide, a methane sulfonate, a p-toluenesulfonate, a trifluoromethanesulfonate and $\text{R}^{18}\text{SO}_3-$, wherein R^{18} is one of linear alkyl, branched alkyl, aryl, benzyl, and $-(\text{CH}_2)_{n'''}\text{R}_f$, wherein n''' is an integer from 0 to 5.
5. The method of claim 1 wherein X is a nucleophilic group selected from the group consisting of $-\text{OH}$, $-\text{NH}_2$, $-\text{NHR}^{19}$, $-\text{NR}^{19}\text{R}^{20}$, $-\text{NHC}(=\text{NH})\text{NH}_2$, $-\text{SH}$, $-\text{SR}^{19}$, $-\text{NH}(\text{CH}_2)_{n'''}\text{NH}_2$, and $-\text{NH}(\text{CH}_2)_{n'''}\text{N}((\text{CH}_2)_{n'''}\text{NH}_2)_2$, wherein n''' is an integer from 1 to 5, and R^{19} and R^{20} are independently, the same or different, one of a linear alkyl, a branched alkyl, an aryl and a benzyl group.
6. The method of claim 1 wherein X is an electrophilic group comprising $-\text{NCZ}$, wherein Z is one of oxygen and sulfur.
7. The method of claim 1 wherein R_f is a fluorous group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.
8. The method of claim 1 wherein X is a leaving group and R^1 and R^2 are each hydrogen.
9. The method of claim 1 wherein X is a leaving group and R^1 and R^2 are independently, the same or different, one of $\text{C}_6\text{H}_{5-m}[\text{W}_p(\text{CH}_2)_n\text{R}_f]_{m'}$ and $\text{C}_6\text{H}_{5-m''}[\text{W}_p(\text{CH}_2)_n\text{R}_f]_{m''}$.
10. The method of claim 1 wherein X is $-\text{SH}$.

11. The method of claim 1 wherein X is one of $\text{NR}^{21}\text{R}^{22}$ and $\text{NR}^{21}\text{R}^{22}\text{R}^{23}+\text{Y}^-$, wherein R^{21} , R^{22} and R^{23} are independently, the same or different, one of a hydrogen, a linear alkyl, a branched alkyl and a benzyl group and Y is a counter anion selected from the group consisting of Cl^- , Br^- , I^- and CO_3^{2-} .
12. The method of claim 1 wherein X is $-\text{OH}$, R^1 is hydrogen and R^2 is one of H and $\text{C}_6\text{H}_{5-q}(\text{W}')_q$.
13. The method of claim 1 wherein X is $-\text{NH}_2$, R^1 is hydrogen and R^2 is $\text{C}_6\text{H}_{5-q}(\text{W}')_q$.
14. The method of claim 1 wherein X is $-\text{NH}(\text{CH}_2)_n\text{NH}_2$.
15. The method of claim 1 wherein X is $-\text{NH}(\text{CH}_2)_n\text{N}((\text{CH}_2)_n\text{NH}_2)_2$.
16. The method of claim 1 wherein X is $-\text{NHC}(=\text{N})\text{NH}_2$.
17. The method of claim 1 wherein X is $-\text{SH}$ and R^1 and R^2 are each hydrogen.
18. The method of claim 1 wherein X is $-\text{SR}^{24}$, wherein R^{24} is one of a linear alkyl, a branched alkyl, an aryl, and a benzyl group.
19. The method of claim 1 wherein X is $-\text{NCZ}$, wherein Z is one of O and S, and R^1 and R^2 are each hydrogen.
20. A method for increasing the fluorous nature of an organic compound, comprising:

reacting the organic compound with at least one second compound having the formula:



to create a first fluoros tagged organic compound, wherein X is a leaving group and R_d is selected from the group consisting of:



wherein R_f and R'_f are each fluoros groups, m is an integer from 1 to 4, m' is an integer from 0 to 4, m'' is an integer from 1 to 5, n and n' are each integers from 0 to 5, p and p' each have a value of 0 or 1, and W and W' are groupings of atoms each selected from the group consisting of O, S, NR^{25} , $\text{CR}^{26}\text{R}^{27}$, and $\text{SiR}^{28}\text{R}^{29}$, wherein R^{25} , R^{26} and R^{27} are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and $-(\text{CH}_2)_n\text{R}_f$, and R^{28} and R^{29} are independently, the same or different, one of linear alkyl, branched alkyl, aryl, benzyl and $-(\text{CH}_2)_n\text{R}_f$,

the organic compound having at least one functional group reactive with group X on the second compound forming at least one chemical bond between the organic compound and the second compound resulting in the first fluoros tagged organic compound wherein the fluoros nature of the first fluoros tagged organic compound is increased relative to the organic compound to enable separation of the first fluoros tagged organic compound from at least one other compound by using a fluoros separation technique.

21. The method of claim 20, further comprising reducing the fluorine content of a second fluoros tagged organic compound, wherein the second fluoros tagged organic compound is produced from subsequent chemical transformations on the first fluoros tagged organic compound.

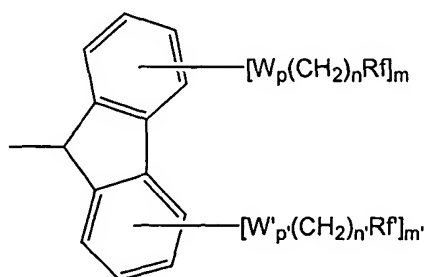
22. The method of claim 21, wherein the fluorine content of the second fluorous tagged organic compound is reduced by removing at least one grouping of atoms having a structure selected from the group consisting of: $-\text{CO}_2\text{CH}_2\text{R}_d$, $-\text{OCH}_2\text{R}_d$, R_d , and R_f from the second fluorous tagged organic compound.

23. The method of claim 20 wherein X is a leaving group selected from the group consisting of a halide, $-\text{N}_3$, $-\text{CN}$, $-\text{OR}$, $-\text{ONH}_2$, $-\text{ONHR}^{30}$, $-\text{ONR}_2$, $-\text{O}_2\text{CR}^{30}$, $-\text{O}_2\text{COR}^{30}$, $-\text{O}_2\text{CNR}^{30}_2$, $-\text{SR}^{30}$, $-\text{OC}(\text{S})\text{R}^{30}$, $\text{R}^{30}\text{CS}_2-$, $-\text{SC}(\text{O})\text{SR}^{30}$, $-\text{SCS}_2\text{R}^{30}$, $-\text{OC}(\text{O})\text{SR}^{30}$, $-\text{OC}(\text{S})\text{OR}^{30}$, $-\text{SC}(\text{S})\text{OR}^{30}$, $\text{R}^{30}\text{SO}_2-$, $\text{R}^{30}\text{SO}_3-$, $\text{R}^{30}\text{OSO}_2-$, $\text{R}^{30}\text{OSO}_3-$, $\text{R}^{30}\text{PO}_3-$, $\text{R}^{30}\text{OPO}_3-$, an N-imidazolyl group, an N-triazolyl group, an N-benzotriazolyl group, a benzotriazolyloxy group, an imidazolyloxy group, an N-imidazolinone group, an N-imidazolone group, an N-imidazolinethione group, an N-succinimidyl group, an N-phthalimidyl group, an N-succinimidyloxy group, an N-phthalimidyloxy group, $-\text{ON}=\text{C}(\text{CN})\text{R}^{30}$, and a 2-pyridyloxy group, wherein R^{30} is one of linear alkyl, branched alkyl, aryl, benzyl, and $-(\text{CH}_2)_n\text{R}_f$, wherein n' is an integer from 0 to 5.

24. The method of claim 20 wherein R_f and R_f are independently, the same or different, a fluorous group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.

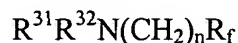
25. The method of claim 20 wherein R_d is $-\text{CH}=\text{CH}-(\text{CH}_2)_n\text{R}_f$.

26. The method of claim 20 wherein R_d is



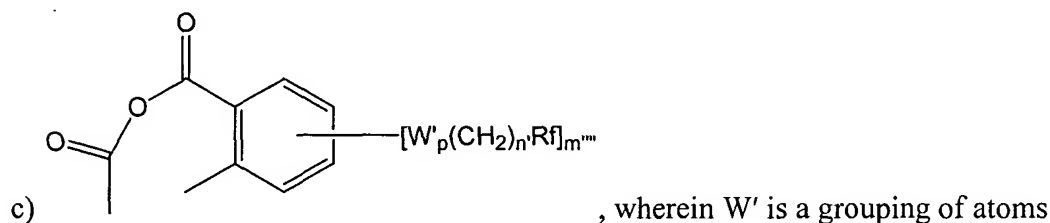
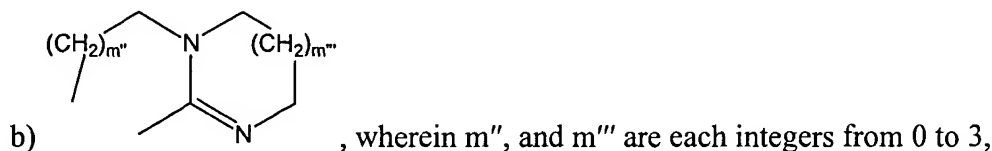
27. The method of claim 20 wherein R_d is $-\text{C}_6\text{H}_{5-m}[\text{W}_p(\text{CH}_2)_n\text{R}_f]_m$.

28. A method for increasing the fluorous nature of an organic compound, comprising:
 reacting the organic compound with at least one fluorous nitrogen containing compound
 having the formula:



to create a first fluorous tagged organic compound, wherein n is an integer from 0 to 5, R_f is a fluorous group, and $R^{31}R^{32}$ is selected from the group consisting of:

a) $-(CH_2)_mW(CH_2)_{m'}-$, wherein m and m' are each integers between 2 and 4, W is one of CH_2 , O, S, NH, and NR^{33} , wherein R^{33} is one of a linear alkyl, a branched alkyl and a benzyl group,



selected from the group consisting of O, S, NR^{34} , $CR^{35}R^{36}$, and $SiR^{37}R^{38}$, p has a value of 0 or 1, n' is an integer from 0 to 5, m'''' is an integer from 0 to 4, R^{34} , R^{35} , and R^{36} are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_nR_f$, and R^{37} and R^{38} are independently, the same or different, one of linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_nR_f$,

d) alkyl and pyridyl,

e) hydrogen and $-(CH_2)_{n''}NH_2$, wherein n'' is an integer from 1 to 5,

f) hydrogen and $-(CH_2)_{n''}N[(CH_2)_{n''}NH_2]_2$, and

g) $-(CH_2)_{n'''}OH$, and $-(CH_2)_{n''''}OH$, wherein n''' and n'''' are each integers between 1 and 5,

the organic compound having at least one functional group reactive with at least one N or -OH group on the second compound forming at least one chemical bond between the organic compound and the second compound resulting in the first fluorous tagged organic compound

wherein the fluorous nature of the first fluorous tagged organic compound is increased relative to the organic compound to enable separation of the first fluorous tagged organic compound from at least one other compound by using a fluorous separation technique.

29. The method of claim 28, further comprising reducing the fluorine content of a second fluorous tagged organic compound, wherein the second fluorous tagged organic compound is produced from subsequent chemical transformations on the first fluorous tagged organic compound.

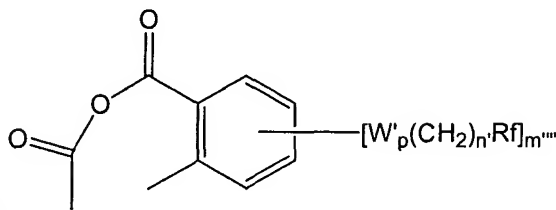
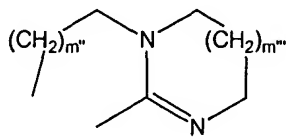
30. The method of claim 29, wherein the fluorine content of the second fluorous tagged organic compound is reduced by removing at least one grouping of atoms having a structure selected from the group consisting of: $R^{31}R^{32}N(CH_2)_nR_f$, $-N(CH_2)_nR_f$, $-(CH_2)_nR_f$, and R_f from the second fluorous tagged organic compound.

31. The method of claim 28 wherein R_f is a fluorous group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.

32. The method of claim 28 wherein the fluorous nitrogen containing compound is a cyclic amine.

33. The method of claim 28 wherein $R^{31}R^{32}$ is $-(CH_2)_mW(CH_2)_{m'}-$.

34. The method of claim 28 wherein $R^{31}R^{32}$ is



35. The method of claim 28 wherein $R^{31}R^{32}$ is

36. The method of claim 28 wherein R^{31} is one of a linear alkyl and a branched alkyl, and R^{32} is pyridyl.

37. The method of claim 28 wherein R^{31} is hydrogen and R^{32} is $-(CH_2)_nNH_2$.

38. The method of claim 28 wherein R^{31} is hydrogen and R^{32} is $-(CH_2)_nN[(CH_2)_nNH_2]_2$.

39. The method of claim 28 wherein R^{31} is $-(CH_2)_nOH$, and R^{32} is $-(CH_2)_nOH$.

40. A method for increasing the fluororous nature of an organic compound, comprising:

reacting the organic compound with at least one second compound having the formula:



to create a first fluororous tagged organic compound, wherein R_f is a fluororous group, m is an integer from 1 to 5, n is an integer from 0 to 5, p has a value of 0 or 1, and W is a grouping of atoms selected from the group consisting of O, S, NR^{39} , $CR^{40}R^{41}$, and $SiR^{42}R^{43}$,

wherein when W is O, X is a grouping of atoms selected from the group consisting of $-SO_2NHNH_2$, $-CHO$ when p is 1, $-SH$, $-(CH_2)_nSH$, $-C(=NR^B)C_6H_4Y$, $-C(=O)CH_2C(=O)R^{44}$, $-COCl$, $-SO_2Cl$, $-OH$, $-NCZ$, and $-SO_3H$,

wherein when W is one of S, NR^{39} , $CR^{40}R^{41}$, and $SiR^{42}R^{43}$, X is a grouping of atoms selected from the group consisting of $-SO_2NH_2$, $-SO_2NHNH_2$, $-CHO$ when p is 1, $-SH$, $-(CH_2)_nSH$, $-C(=NR^B)C_6H_4Y$, $-C(=O)CH_2C(=O)R^{44}$, $-COCl$, $-SO_2Cl$, $-OH$, $-NCZ$, and $-SO_3H$,

wherein n' is an integer from 2 to 5, r is an integer from 0 to 2, Z is one of O and S, Y is one of an electron withdrawing group, a hydrogen and an alkyl group, R^B is one of hydrogen, alkyl, aryl and hydroxyl, R^{44} is one of linear alkyl, branched alkyl and benzyl, R^{39} , R^{40} and R^{41} are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_nR_f$, and R^{42} and R^{43} are independently, the same or different, one of linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_nR_f$,

the organic compound having at least one functional group reactive with group X on the second compound forming at least one chemical bond between the organic compound and the second compound resulting in the first fluorous tagged organic compound wherein the fluorous nature of the first fluorous tagged organic compound is increased relative to the organic compound to enable separation of the first fluorous tagged organic compound from at least one other compound by using a fluorous separation technique.

41. The method of claim 40, further comprising reducing the fluorine content of a second fluorous tagged organic compound, wherein the second fluorous tagged organic compound is produced from subsequent chemical transformations on the first fluorous tagged organic compound.

42. The method of claim 41, wherein the fluorine content of the second fluorous tagged organic compound is reduced by removing at least one grouping of atoms having a structure selected from the group consisting of: $-\text{C}_6\text{H}_5\text{-m-}[\text{W}_p(\text{CH}_2)_n\text{R}_f]_m$, $-\text{W}_p(\text{CH}_2)_n\text{R}_f$, $-(\text{CH}_2)_n\text{R}_f$, and R_f from the second fluorous tagged organic compound.

43. The method of claim 40 wherein R_f is a fluorous group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.

44. The method of claim 40 wherein X is $-\text{SO}_2\text{NH}_2$ and W is one of S, NR^{39} , $\text{CR}^{40}\text{R}^{41}$, and $\text{SiR}^{42}\text{R}^{43}$.

45. The method of claim 40 wherein X is $-\text{SO}_2\text{NHNH}_2$.

46. The method of claim 40 wherein X is $-\text{CHO}$ and p is 1.

47. The method of claim 40 wherein X is $-\text{SH}$.

48. The method of claim 40 wherein X is $-(\text{CH}_2)_n\text{SH}$.

49. The method of claim 40 wherein X is $-\text{C}(=\text{NR}^{\text{B}})\text{C}_6\text{H}_4\text{Y}$, wherein Y is one of an electron withdrawing group, a hydrogen and an alkyl group, and R^{B} is one of hydrogen, alkyl, aryl and hydroxyl.

50. The method of claim 49 wherein Y is an electron withdrawing group selected from the group consisting of $-\text{NO}_2$, $-\text{CN}$, $-\text{F}$ and $-\text{Cl}$.

51. The method of claim 40 wherein X is $-\text{C}(=\text{O})\text{CH}_2\text{C}(=\text{O})\text{R}^{44}$.

52. The method of claim 40 wherein X is $-\text{COCl}$.

53. The method of claim 40 wherein X is $-\text{SO}_2\text{Cl}$.

54. The method of claim 40 wherein X is $-\text{OH}$.

55. The method of claim 40 wherein X is $-\text{NCZ}$, wherein Z is one of O and S.

56. The method of claim 40 wherein X is $-\text{SO}_3\text{H}$.

57. A method for increasing the fluorous nature of an organic compound, comprising:
reacting the organic compound with at least one second compound having the formula:



to create a first fluorous tagged organic compound, wherein R_f is a fluorous group, n is an integer from 0 to 5, and X is a grouping of atoms selected from the group consisting of $-\text{C}(\text{CH}_3)_2\text{COCl}$, $-\text{CR}^{45}\text{R}^{46}\text{SH}$, $-\text{CR}^{45}\text{R}^{46}\text{SR}^{47}$, $-\text{SO}_2\text{Cl}$, $-\text{OC}(=\text{O})\text{NHNH}_2$, $-\text{NHC}(=\text{NH})\text{NH}_2$, $-\text{SO}_2\text{NH}_2$, $-\text{SO}_2\text{NHNH}_2$, $-\text{NCZ}$, $-\text{maleimide}$, $-\alpha\text{-succinic anhydride}$, and $-\text{COCH}_2\text{COR}^{48}$, wherein Z is one of O and S, and R^{45} , R^{46} , R^{47} , and R^{48} are independently, the same or different, selected from the group consisting of hydrogen, linear alkyl, branched alkyl, benzyl, and $-(\text{CH}_2)_n\text{R}_f$,

the organic compound having at least one functional group reactive with group X on the second compound forming at least one chemical bond between the organic compound and the second compound resulting in the first fluorous tagged organic compound wherein the fluorous

nature of the first fluorous tagged organic compound is increased relative to the organic compound to enable separation of the first fluorous tagged organic compound from at least one other compound by using a fluorous separation technique.

58. The method of claim 57, further comprising reducing the fluorine content of a second fluorous tagged organic compound, wherein the second fluorous tagged organic compound is produced from subsequent chemical transformations on the first fluorous tagged organic compound.

59. The method of claim 58, wherein the fluorine content of the second fluorous tagged organic compound is reduced by removing at least one grouping of atoms having a structure selected from the group consisting of: $X'(CH_2)_nR_f$, $-(CH_2)_nR_f$, and R_f from the second fluorous tagged organic compound, wherein X' is one of $COC(CH_3)_2-$, SO_2- and NH_2NHCO_2- .

60. The method of claim 57 wherein R_f is a fluorous group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.

61. The method of claim 57 wherein X is $-C(CH_3)_2COCl$.

62. The method of claim 57 wherein X is $-CR^{45}R^{46}SH$.

63. The method of claim 57 wherein X is $-CR^{45}R^{46}SR^{47}$.

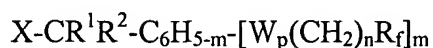
64. The method of claim 57 wherein X is $-SO_2Cl$.

65. The method of claim 57 wherein X is $-OC(=O)NHNH_2$.

66. The method of claim 57 wherein X is $-NHC(=NH)NH_2$.

67. The method of claim 57 wherein X is $-SO_2NH_2$.

68. The method of claim 57 wherein X is $-\text{SO}_2\text{NHNH}_2$.
69. The method of claim 57 wherein X is $-\text{NCZ}$, wherein Z is one of O and S.
70. The method of claim 57 wherein X is $-\text{maleimide}$.
71. The method of claim 57 wherein X is $-\alpha\text{-succinic anhydride}$.
72. The method of claim 57 wherein X is $-\text{COCH}_2\text{COR}^{48}$.
73. A compound for increasing the fluorous nature of an organic compound, said compound having the formula:



wherein R_f is a fluorous group, X is selected from the group consisting of a leaving group, a nucleophilic group and an electrophilic group, R^1 and R^2 are independently, the same or different, one of a hydrogen, a linear alkyl, a branched alkyl, a phenyl, an aryl, $\text{C}_6\text{H}_5\text{-q}(\text{W}')_q$, $\text{C}_6\text{H}_{5-m}[\text{W}_p(\text{CH}_2)_n\text{R}_f]_{m'}$ and $\text{C}_6\text{H}_{5-m''}[\text{W}_{p''}(\text{CH}_2)_n\text{R}_f]_{m''}$, m, m' and m'' are each integers from 1 to 5, n, n' and n'' are each integers from 0 to 5, p, p' and p'' each have a value of 0 or 1, q is an integer from 0 to 5, W is a grouping of atoms selected from the group consisting of O, S, NR^3 , CR^4R^5 , and SiR^6R^7 , wherein when W is SiR^6R^7 and R^1 and R^2 are each hydrogen, X is not one of Br, N-imidazolyl and $-\text{OH}$, and W' is a grouping of atoms selected from the group consisting of OR^8 , SR^9 , $\text{NR}^{10}\text{R}^{11}$, $\text{CR}^{12}\text{R}^{13}\text{R}^{14}$, and $\text{SiR}^{15}\text{R}^{16}\text{R}^{17}$, wherein R^3 , R^4 , R^5 , R^6 , R^8 , R^9 , R^{10} , R^{11} , R^{12} , R^{13} , and R^{14} are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and $-(\text{CH}_2)_n\text{-R}_f$ and R^6 , R^7 , R^{15} , R^{16} , and R^{17} are independently, the same or different, one of linear alkyl, branched alkyl, aryl, benzyl and $-(\text{CH}_2)_n\text{-R}_f$, wherein n''' in an integer from 0 to 5.

74. The compound of claim 73 wherein X is a leaving group selected from the group consisting of a halide, a methane sulfonate, a p-toluenesulfonate, a trifluoromethanesulfonate and

$R^{18}SO_3-$, wherein R^{18} is one of linear alkyl, branched alkyl, aryl, benzyl, and $-(CH_2)_nR_f$, wherein n is an integer from 0 to 5.

75. The compound of claim 73 wherein X is a nucleophilic group selected from the group consisting of $-OH$, $-OR^{19}$, $-NH_2$, $-NHR^{19}$, $-NR^{19}R^{20}$, $-NHC(=NH)NH_2$, $-SH$, $-SR^{19}$, $-NH(CH_2)_nNH_2$, and $-NH(CH_2)_nN((CH_2)_nNH_2)_2$, wherein n is an integer from 1 to 5, and R^{19} and R^{20} are independently, the same or different, one of a linear alkyl, a branched alkyl, an aryl and a benzyl group.

76. The compound of claim 73 wherein X is the electrophilic group comprising $-NCZ$, wherein Z is one of oxygen and sulfur.

77. The compound of claim 73 wherein R_f is a fluorous group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.

78. The compound of claim 73 wherein X is a leaving group and R^1 and R^2 are each hydrogen.

79. The compound of claim 73 wherein X is a leaving group and R^1 and R^2 are independently, the same or different, one of $C_6H_5-m[W_p(CH_2)_nR_f]_{m'}$ and $C_6H_5-m''[W_{p''}(CH_2)_nR_f]_{m''}$.

80. The compound of claim 73 wherein X is $-SH$.

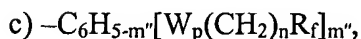
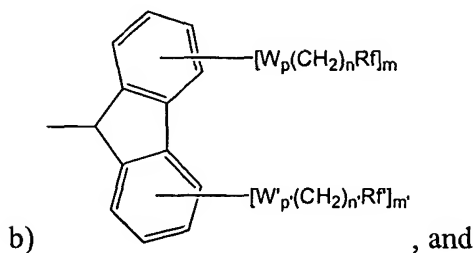
81. The compound of claim 73 wherein X is one of $NR^{21}R^{22}$ and $NR^{21}R^{22}R^{23}+Y^-$, wherein R^{21} , R^{22} and R^{23} are independently, the same or different, one of a hydrogen, a linear alkyl, a branched alkyl and a benzyl group and Y is a counter anion selected from the group consisting of Cl^- , Br^- , I^- and CO_3^{2-} .

82. The compound of claim 73 wherein X is $-OH$, R^1 is hydrogen and R^2 is $C_6H_5-q(W')_q$.

83. The compound of claim 73 wherein X is $-\text{NH}_2$, R^1 is hydrogen and R^2 is $\text{C}_6\text{H}_{5-q}(\text{W}')_q$.
84. The compound of claim 73 wherein X is $-\text{NH}(\text{CH}_2)_{n'''}\text{NH}_2$.
85. The compound of claim 73 wherein X is $-\text{NH}(\text{CH}_2)_{n'''}\text{N}((\text{CH}_2)_{n'''}\text{NH}_2)_2$.
86. The compound of claim 73 wherein X is $-\text{NHC}(=\text{N})\text{NH}_2$.
87. The compound of claim 73 wherein X is $-\text{SH}$ and R^1 and R^2 are each hydrogen.
88. The compound of claim 73 wherein X is SR^{24} , wherein R^{24} is one of a linear alkyl, a branched alkyl, an aryl, and a benzyl group.
89. The compound of claim 73 wherein X is $-\text{NCZ}$, wherein Z is one of O and S and R^1 and R^2 are each hydrogen.
90. A compound for increasing the fluorous nature of an organic compound, the compound having the formula:



wherein X is a leaving group and R_d is selected from the group consisting of:



wherein R_f and R'_f are fluorous groups, m is an integer from 1 to 4, m' is an integer from 0 to 4, m'' is an integer from 1 to 5, n and n' are each integers from 0 to 5, p and p' each have a value of 0 or 1, and W and W' are groupings of atoms each selected from the group consisting of

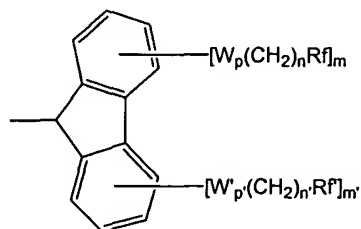
O, S, NR^{25} , $\text{CR}^{26}\text{R}^{27}$, and $\text{SiR}^{28}\text{R}^{29}$, wherein R^{25} , R^{26} and R^{27} are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and $-(\text{CH}_2)_n\text{R}_f$, and R^{28} and R^{29} are independently, the same or different, one of linear alkyl, branched alkyl, aryl, benzyl and $-(\text{CH}_2)_n\text{R}_f$.

91. The compound of claim 90 wherein X is a leaving group selected from the group consisting of a halide, $-\text{N}_3$, $-\text{CN}$, $-\text{OR}^{30}$, $-\text{ONH}_2$, $-\text{ONHR}^{30}$, $-\text{ONR}^{30}_2$, $-\text{O}_2\text{CR}^{30}$, $-\text{O}_2\text{COR}^{30}$, $-\text{O}_2\text{CNR}^{30}_2$, $-\text{SR}^{30}$, $-\text{OC}(\text{S})\text{R}^{30}$, $\text{R}^{30}\text{CS}_2-$, $-\text{SC}(\text{O})\text{SR}^{30}$, $-\text{SCS}_2\text{R}^{30}$, $-\text{OC}(\text{O})\text{SR}^{30}$, $-\text{OC}(\text{S})\text{OR}^{30}$, $-\text{SC}(\text{S})\text{OR}^{30}$, $\text{R}^{30}\text{SO}_2-$, $\text{R}^{30}\text{SO}_3-$, $\text{R}^{30}\text{OSO}_2-$, $\text{R}^{30}\text{OSO}_3-$, $\text{R}^{30}\text{PO}_3-$, $\text{R}^{30}\text{OPO}_3-$, an N-imidazolyl group, an N-triazolyl group, an N-benzotriazolyl group, a benzotriazolyl group, an imidazolyl group, an N-imidazolyl group, an N-imidazolinone group, an N-imidazolone group, an N-imidazolinethione group, an N-succinimidyl group, an N-phthalimidyl group, an N-succinimidyl group, an N-phthalimidyl group, $-\text{ON}=\text{C}(\text{CN})\text{R}^{30}$, and a 2-pyridyl group, wherein R^{30} is one of linear alkyl, branched alkyl, aryl, benzyl, and $-(\text{CH}_2)_n\text{R}_f$, wherein n is an integer from 0 to 5.

92. The compound of claim 90 wherein R_f and R_f' are independently, the same or different, a fluorinated group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.

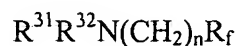
93. The compound of claim 90 wherein R_d is $-\text{CH}=\text{CH}-(\text{CH}_2)_n\text{R}_f$.

94. The compound of claim 90 wherein R_d is



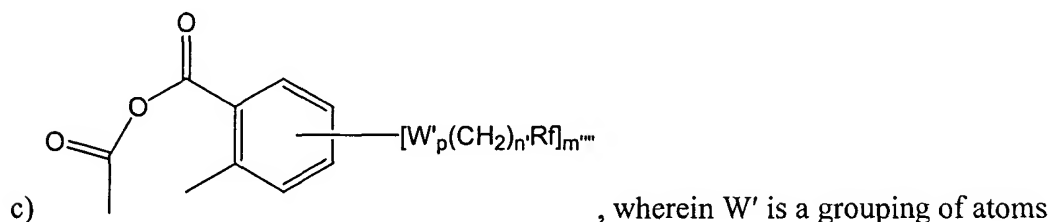
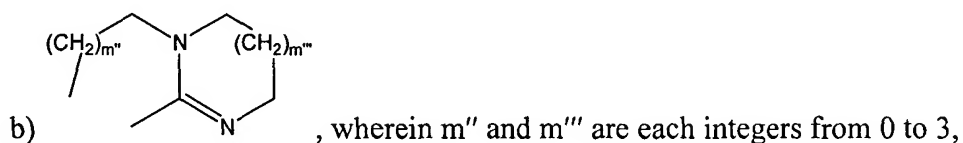
95. The compound of claim 90 wherein R_d is $-\text{C}_6\text{H}_5-[\text{W}_p(\text{CH}_2)_n\text{R}_f]_m$.

96. A fluorous nitrogen containing compound having the formula:



wherein n is an integer from 0 to 5, R_f is a fluorous group, and $R^{31}R^{32}$ is selected from the group consisting of:

a) $-(CH_2)_mW(CH_2)_{m'}-$, wherein m and m' are each integers between 2 and 4, W is one of CH_2 , O, S, NH, and NR^{33} , wherein R^{33} is one of a linear alkyl, a branched alkyl and a benzyl group,



selected from the group consisting of O, S, NR^{34} , $CR^{35}R^{36}$, $SiR^{37}R^{38}$, p has a value of 0 or 1, n' is an integer from 0 to 5, m'''' is an integer from 0 to 4, R^{34} , R^{35} , and R^{36} are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_nR_f$, and R^{37} and R^{38} are independently, the same or different, one of linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_nR_f$,

d) alkyl and pyridyl,

e) hydrogen and $-(CH_2)_nNH_2$, wherein n'' is an integer from 1 to 5,

f) hydrogen and $-(CH_2)_nN[(CH_2)_nNH_2]_2$, and

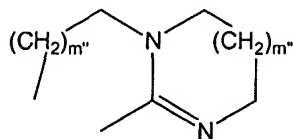
g) $-(CH_2)_{n'''}OH$, and $-(CH_2)_{n''''}OH$, wherein n''' and n'''' are each integers between 1 and 5.

97. The compound of claim 96 wherein R_f is a fluorous group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.

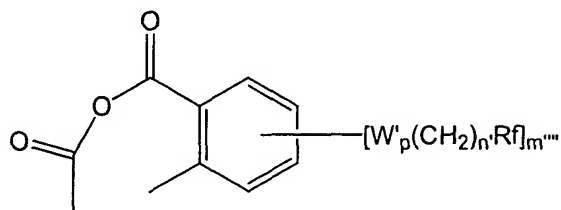
98. The compound of claim 96 wherein the fluorous nitrogen containing compound is a cyclic amine.

99. The compound of claim 96 wherein $R^{31}R^{32}$ is $-(CH_2)_mW(CH_2)_{m'}-$.

100. The compound of claim 96 wherein $R^{31}R^{32}$ is



101. The compound of claim 96 wherein $R^{31}R^{32}$ is



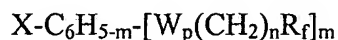
102. The compound of claim 96 wherein R^{31} is one of linear alkyl and branched alkyl, and R^{32} is pyridyl.

103. The compound of claim 96 wherein R^{31} is hydrogen and R^{32} is $-(CH_2)_nNH_2$.

104. The compound of claim 96 wherein R^{31} is hydrogen and R^{32} is $-(CH_2)_nN[(CH_2)_nNH_2]_2$.

105. The compound of claim 96 wherein R^{31} is $-(CH_2)_{n'''}OH$, and R^{32} is $-(CH_2)_{n''''}OH$.

106. A compound for increasing the fluorous nature of an organic compound, the compound having the formula:



wherein R_f is a fluorous group, m is an integer from 1 to 5, n is an integer from 0 to 5, p has a value of 0 or 1, and W is a grouping of atoms selected from the group consisting of O, S, NR^{39} , $CR^{40}R^{41}$, and $SiR^{42}R^{43}$,

wherein when W is O, X is a grouping of atoms selected from the group consisting of $-SO_2NHNH_2$, $-CHO$ when p is 1, $-SH$, $-(CH_2)_nSH$, $-C(=NR^B)C_6H_4Y$, $-C(=O)CH_2C(=O)R^{44}$,

wherein when W is one of S, NR^{39} , $CR^{40}R^{41}$, and $SiR^{42}R^{43}$, X is a grouping of atoms selected from the group consisting of $-SO_2NHNH_2$, $-CHO$ when p is 1, $-SH$, $-(CH_2)_nSH$, $-C(=NR^B)C_6H_4Y$, and $-C(=O)CH_2C(=O)R^{44}$,

wherein Y is one of an electron withdrawing group, a hydrogen and an alkyl group, R^B is one of hydrogen, alkyl, aryl and hydroxyl, R^{44} is one of linear alkyl, branched alkyl and benzyl, R^{39} , R^{40} and R^{41} are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_nR_f$, and R^{42} and R^{43} are independently, the same or different, one of linear alkyl, branched alkyl, aryl, benzyl and $-(CH_2)_nR_f$.

107. The compound of claim 106 wherein R_f is a fluorous group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.

108. The compound of claim 106 wherein X is $-SO_2NHNH_2$ and W is one of S, NR^{39} , $CR^{40}R^{41}$, and $SiR^{42}R^{43}$.

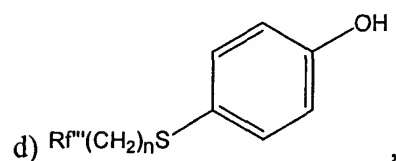
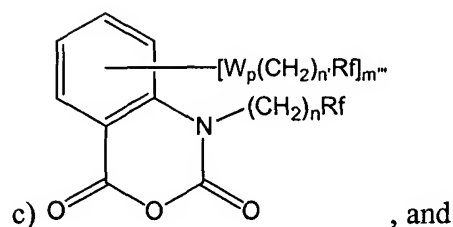
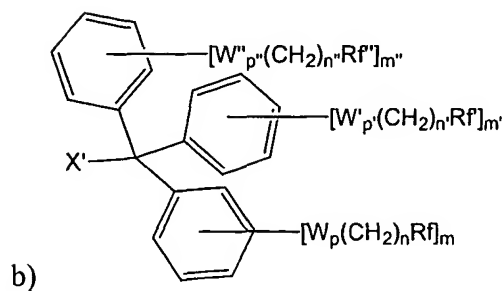
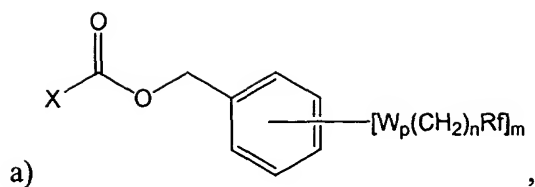
109. The compound of claim 106 wherein X is $-SO_2NHNH_2$.

110. The compound of claim 106 wherein X is $-\text{CHO}$ and p is 1.
111. The compound of claim 106 wherein X is $-\text{SH}$.
112. The compound of claim 106 wherein X is $-(\text{CH}_2)_n\text{SH}$.
113. The compound of claim 106 wherein X is $-\text{C}(=\text{NR}^{\text{B}})\text{C}_6\text{H}_4\text{Y}$, wherein Y is one of an electron withdrawing group, a hydrogen and an alkyl group, and R^{B} is one of hydrogen, alkyl, aryl and hydroxyl.
114. The compound of claim 113 wherein Y is an electron withdrawing group selected from the group consisting of $-\text{NO}_2$, $-\text{CN}$, $-\text{F}$ and $-\text{Cl}$.
115. The compound of claim 106 wherein X is $-\text{C}(=\text{O})\text{CH}_2\text{C}(=\text{O})\text{R}^{44}$.
116. A compound for increasing the fluorous nature of an organic compound, the compound having the formula:



wherein R_f is a fluorous group, n is an integer from 0 to 5, and X is $-\text{C}(\text{CH}_3)_2\text{COCl}$.

117. The compound of claim 116 wherein R_f is a fluorous group selected from the group consisting of a perfluorocarbon, a fluorohydrocarbon, a fluorinated ether and a fluorinated amine.
118. A compound for increasing the fluorous nature of an organic compound, the compound having the structure selected from the group consisting of:



wherein X and X' are each leaving groups, R_f, R_f', and R_f'' are each fluororous groups, R_f''' is a perfluoroalkyl group of 8 to 16 carbon atoms, m is an integer from 1 to 5, m', m'', n, n', and n'' are each integers from 0 to 5, m''' is an integer from 0 to 4, p, p', and p'' each have a value of 0 or 1, and W, W' and W'' are each a grouping atoms of selected from the group consisting of O, S, NR⁴⁹, CR⁵⁰R⁵¹, and SiR⁵²R⁵³, wherein R⁴⁹, R⁵⁰, and R⁵¹ are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and -(CH₂)_nR_f, R⁵² and R⁵³ are independently, the same or different, one of hydrogen, linear alkyl, branched alkyl, aryl, benzyl and -(CH₂)_nR_f and n''' is an integer from 0 to 5.

119. The compound of claim 118 wherein X is a leaving group selected from the group consisting of a halide, $-N_3$, $-CN$, $-OR^{54}$, $-ONH_2$, $-ONHR^{54}$, $-ONR^{54}_2$, $-O_2CR^{54}$, $-O_2COR^{54}$, $-O_2CNR^{54}_2$, $-SR^{54}$, $-OC(S)R^{54}$, $R^{54}CS_2-$, $-SC(O)SR^{54}$, $-SCS_2R^{54}$, $-OC(O)SR^{54}$, $-OC(S)OR^{54}$, $-SC(S)OR^{54}$, $R^{54}SO_2-$, $R^{54}SO_3-$, $R^{54}OSO_2-$, $R^{54}OSO_3-$, $R^{54}PO_3-$, $R^{54}OPO_3-$, an N-imidazolyl group, an N-triazolyl group, an N-benzotriazolyl group, a benzotriazolyloxy group, an imidazolyloxy group, an N-imidazolinone group, an N-imidazolone group, an N-imidazolinethione group, an N-succinimidyl group, an N-phthalimidyl group, an N-succinimidyloxy group, an N-phthalimidyloxy group, $-ON=C(CN)R^{54}$, and a 2-pyridyloxy group, wherein R^{54} is one of linear alkyl, branched alkyl, aryl, benzyl, and $-(CH_2)_{n'''}R_f$, wherein n''' is an integer from 0 to 5.

120. The compound of claim 118 wherein X' is a leaving group selected from the group consisting of a halide, a methane sulfonate, a p-toluenesulfonate, a trifluoromethanesulfonate and $R^{18}SO_3-$, wherein R^{18} is one of linear alkyl, branched alkyl, aryl, benzyl, and $-(CH_2)_{n'''}R_f$, wherein n''' is an integer from 0 to 5.